Table 1: THE HYPERVOLUME PERFORMANCE OF EACH SUBSET SELECTION METHOD ON EACH CANDIDATE SOLUTION SET. THE NUMBER OF SOLUTIONS IN EACH CANDIDATESOLUTION SET IS 1,000,000. THE NUMBER IN THE PARENTHESIS IS THE RANK OF THE CORRESPONDING METHOD AMONG THE 10 METHODS, WHERE A SMALLER VALUE INDICATES A BETTER RANK.

| Candidate Solution Set | | GHSS | GAHSS | GIGDSS | GIGD+SS | DSS | IDSS | CSS-MEA | CSS-MED | RVSS-PD | RVSS-AD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Linear Triangular | 3 | -(8.5) | 1.52E+0(3) | -(8.5) | -(8.5) | 1.51E+0(4) | 1.51E+0(5) | 1.43E+0(6) | -(8.5) | **1.52E+0(1.5)** | **1.52E+0(1.5)** |
| | 5 | -(8.5) | **2.45E+0(1)** | -(8.5) | -(8.5) | 2.45E+0(2) | 2.42E+0(5) | 2.04E+0(6) | -(8.5) | 2.45E+0(4) | 2.45E+0(3) |
| | 8 | -(8.5) | **4.29E+0(1)** | -(8.5) | -(8.5) | 4.28E+0(2) | 4.21E+0(5) | 3.33E+0(6) | -(8.5) | 4.28E+0(4) | 4.28E+0(3) |
| | 10 | -(8.5) | **6.19E+0(1)** | -(8.5) | -(8.5) | 6.18E+0(2) | 6.11E+0(5) | 5.14E+0(6) | -(8.5) | 6.18E+0(4) | 6.18E+0(3) |
| Linear Invertedtriangular | 3 | -(8.5) | **5.29E-1(1)** | -(8.5) | -(8.5) | 5.26E-1(2) | 5.22E-1(3) | 5.11E-1(4) | -(8.5) | 5.03E-1(5) | 5.02E-1(6) |
| | 5 | -(8.5) | **9.09E-2(1)** | -(8.5) | -(8.5) | 9.01E-2(2) | 8.51E-2(3) | 7.97E-2(4) | -(8.5) | 7.63E-2(5) | 6.73E-2(6) |
| | 8 | -(8.5) | **1.87E-3(1)** | -(8.5) | -(8.5) | 1.86E-3(2) | 1.82E-3(3) | 1.57E-3(4) | -(8.5) | 9.89E-4(6) | 1.08E-3(5) |
| | 10 | -(8.5) | 1.47E-4(2) | -(8.5) | -(8.5) | **1.48E-4(1)** | 1.38E-4(3) | 1.13E-4(4) | -(8.5) | 6.44E-5(6) | 7.91E-5(5) |
| Concave Triangular | 3 | -(8.5) | **1.15E+0(1)** | -(8.5) | -(8.5) | 1.14E+0(2) | 1.13E+0(5) | 1.04E+0(6) | -(8.5) | 1.14E+0(3.5) | 1.14E+0(3.5) |
| | 5 | -(8) | **2.19E+0(1)** | -(8) | -(8) | 2.16E+0(4) | 2.02E+0(5) | -(8) | -(8) | 2.18E+0(2.5) | 2.18E+0(2.5) |
| | 8 | -(8.5) | **4.10E+0(1)** | -(8.5) | -(8.5) | 4.02E+0(4) | 3.38E+0(5) | 1.84E+0(6) | -(8.5) | 4.04E+0(2.5) | 4.04E+0(2.5) |
| | 10 | -(8.5) | **6.04E+0(1)** | -(8.5) | -(8.5) | 5.96E+0(4) | 4.89E+0(5) | 2.71E+0(6) | -(8.5) | 5.98E+0(2.5) | 5.98E+0(2.5) |
| Concave Invertedtriangular | 3 | -(8.5) | **2.25E-1(1)** | -(8.5) | -(8.5) | 2.21E-1(2) | 2.11E-1(5) | 1.93E-1(6) | -(8.5) | 2.13E-1(4) | 2.15E-1(3) |
| | 5 | -(8) | **2.06E-2(1)** | -(8) | -(8) | 1.93E-2(2) | 1.37E-2(3) | -(8) | -(8) | 9.28E-3(5) | 9.29E-3(4) |
| | 8 | -(8.5) | **2.52E-4(1)** | -(8.5) | -(8.5) | 2.35E-4(2) | 1.11E-4(3) | 8.35E-5(5) | -(8.5) | 7.77E-5(6) | 1.07E-4(4) |
| | 10 | -(8.5) | **1.25E-5(1)** | -(8.5) | -(8.5) | 1.17E-5(2) | 4.41E-6(3) | 3.74E-6(4) | -(8.5) | 3.26E-6(5) | 3.04E-6(6) |
| Convex Triangular | 3 | -(8.5) | 1.71E+0(3) | -(8.5) | -(8.5) | 1.71E+0(2) | **1.71E+0(1)** | 1.71E+0(6) | -(8.5) | 1.71E+0(4) | 1.71E+0(5) |
| | 5 | -(8.5) | 2.49E+0(5) | -(8.5) | -(8.5) | **2.49E+0(1)** | 2.49E+0(2) | 2.48E+0(6) | -(8.5) | 2.49E+0(3) | 2.49E+0(4) |
| | 8 | -(8.5) | 4.30E+0(5) | -(8.5) | -(8.5) | **4.30E+0(1)** | 4.30E+0(4) | 4.30E+0(6) | -(8.5) | 4.30E+0(3) | 4.30E+0(2) |
| | 10 | -(8.5) | 6.19E+0(5) | -(8.5) | -(8.5) | **6.19E+0(1)** | 6.19E+0(4) | 6.19E+0(6) | -(8.5) | 6.19E+0(3) | 6.19E+0(2) |
| Convex Invertedtriangular | 3 | -(8.5) | 1.04E+0(2) | -(8.5) | -(8.5) | 1.04E+0(4) | 1.04E+0(3) | **1.04E+0(1)** | -(8.5) | 1.01E+0(6) | 1.01E+0(5) |
| | 5 | -(8.5) | **4.91E-1(1)** | -(8.5) | -(8.5) | 4.61E-1(4) | 4.73E-1(3) | 4.88E-1(2) | -(8.5) | 3.59E-1(6) | 3.62E-1(5) |
| | 8 | -(8.5) | **6.18E-2(1)** | -(8.5) | -(8.5) | 3.56E-2(4) | 4.47E-2(3) | 5.54E-2(2) | -(8.5) | 3.12E-2(5) | 3.05E-2(6) |
| | 10 | -(8.5) | **1.42E-2(1)** | -(8.5) | -(8.5) | 6.60E-3(6) | 9.31E-3(3) | 1.22E-2(2) | -(8.5) | 7.23E-3(4) | 7.14E-3(5) |
| Avg Rank | | 8.46 | **1.75** | 8.46 | 8.46 | 2.58 | 3.71 | 5.00 | 8.46 | 4.19 | 3.94 |

Table 2: THE IGD PERFORMANCE OF EACH SUBSET SELECTION METHOD ON EACH CANDIDATE SOLUTION SET. THE NUMBER OF SOLUTIONS IN EACH CANDIDATESOLUTION SET IS 1,000,000. THE NUMBER IN THE PARENTHESIS IS THE RANK OF THE CORRESPONDING METHOD AMONG THE 10 METHODS, WHERE A SMALLER VALUE INDICATES A BETTER RANK.

| Candidate Solution Set | | GHSS | GAHSS | GIGDSS | GIGD+SS | DSS | IDSS | CSS-MEA | CSS-MED | RVSS-PD | RVSS-AD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Linear Triangular | 3 | -(8.5) | 4.23E-2(5) | -(8.5) | -(8.5) | 4.40E-2(6) | 4.03E-2(2) | **3.71E-2(1)** | -(8.5) | 4.13E-2(3.5) | 4.13E-2(3.5) |
| | 5 | -(8.5) | 1.02E-1(4) | -(8.5) | -(8.5) | 9.95E-2(3) | 9.26E-2(2) | **8.13E-2(1)** | -(8.5) | 1.06E-1(5) | 1.07E-1(6) |
| | 8 | -(8.5) | 1.88E-1(6) | -(8.5) | -(8.5) | 1.82E-1(5) | 1.57E-1(2) | **1.31E-1(1)** | -(8.5) | 1.72E-1(3) | 1.74E-1(4) |
| | 10 | -(8.5) | 1.91E-1(6) | -(8.5) | -(8.5) | 1.83E-1(4) | 1.58E-1(2) | **1.34E-1(1)** | -(8.5) | 1.83E-1(3) | 1.88E-1(5) |
| Linear Invertedtriangular | 3 | -(8.5) | 4.32E-2(3) | -(8.5) | -(8.5) | 4.39E-2(4) | 4.05E-2(2) | **3.71E-2(1)** | -(8.5) | 7.09E-2(5) | 7.12E-2(6) |
| | 5 | -(8.5) | 1.06E-1(4) | -(8.5) | -(8.5) | 9.97E-2(3) | 9.25E-2(2) | **8.13E-2(1)** | -(8.5) | 1.34E-1(5) | 1.71E-1(6) |
| | 8 | -(8.5) | 1.61E-1(3) | -(8.5) | -(8.5) | 1.84E-1(4) | 1.58E-1(2) | **1.31E-1(1)** | -(8.5) | 2.07E-1(6) | 2.02E-1(5) |
| | 10 | -(8.5) | 1.64E-1(3) | -(8.5) | -(8.5) | 1.83E-1(4) | 1.57E-1(2) | **1.34E-1(1)** | -(8.5) | 1.93E-1(6) | 1.86E-1(5) |
| Concave Triangular | 3 | -(8.5) | 6.43E-2(6) | -(8.5) | -(8.5) | 5.52E-2(3) | 5.39E-2(2) | **4.99E-2(1)** | -(8.5) | 5.79E-2(4.5) | 5.79E-2(4.5) |
| | 5 | -(8) | 1.84E-1(3) | -(8) | -(8) | 1.62E-1(2) | **1.54E-1(1)** | -(8) | -(8) | 1.88E-1(4.5) | 1.88E-1(4.5) |
| | 8 | -(8.5) | 4.02E-1(6) | -(8.5) | -(8.5) | 3.38E-1(3) | 3.13E-1(2) | **2.76E-1(1)** | -(8.5) | 3.86E-1(4.5) | 3.86E-1(4.5) |
| | 10 | -(8.5) | 4.44E-1(6) | -(8.5) | -(8.5) | 3.74E-1(3) | 3.47E-1(2) | **3.11E-1(1)** | -(8.5) | 4.40E-1(4.5) | 4.40E-1(4.5) |
| Concave Invertedtriangular | 3 | -(8.5) | 3.53E-2(4) | -(8.5) | -(8.5) | 2.85E-2(3) | 2.71E-2(2) | **2.43E-2(1)** | -(8.5) | 6.86E-2(6) | 6.63E-2(5) |
| | 5 | -(8) | 5.92E-2(3) | -(8) | -(8) | 4.46E-2(2) | **3.73E-2(1)** | -(8) | -(8) | 2.77E-1(5) | 1.77E-1(4) |
| | 8 | -(8.5) | 9.70E-2(4) | -(8.5) | -(8.5) | 7.08E-2(3) | 4.72E-2(2) | **3.65E-2(1)** | -(8.5) | 3.68E-1(6) | 2.68E-1(5) |
| | 10 | -(8.5) | 8.45E-2(4) | -(8.5) | -(8.5) | 6.13E-2(3) | 3.83E-2(2) | **3.06E-2(1)** | -(8.5) | 4.06E-1(6) | 2.59E-1(5) |
| Convex Triangular | 3 | -(8.5) | 3.01E-2(4) | -(8.5) | -(8.5) | 2.85E-2(3) | 2.70E-2(2) | **2.43E-2(1)** | -(8.5) | 4.50E-2(5) | 4.50E-2(6) |
| | 5 | -(8.5) | 3.65E-2(2) | -(8.5) | -(8.5) | 4.50E-2(4) | 3.73E-2(3) | **3.19E-2(1)** | -(8.5) | 5.36E-2(5) | 5.37E-2(6) |
| | 8 | -(8.5) | 4.43E-2(2) | -(8.5) | -(8.5) | 7.16E-2(6) | 4.74E-2(3) | **3.65E-2(1)** | -(8.5) | 5.73E-2(4) | 5.75E-2(5) |
| | 10 | -(8.5) | 3.72E-2(2) | -(8.5) | -(8.5) | 6.06E-2(6) | 3.82E-2(3) | **3.06E-2(1)** | -(8.5) | 4.42E-2(5) | 4.41E-2(4) |
| Convex Invertedtriangular | 3 | -(8.5) | 5.46E-2(3) | -(8.5) | -(8.5) | 5.48E-2(4) | 5.38E-2(2) | **5.00E-2(1)** | -(8.5) | 7.50E-2(6) | 7.50E-2(5) |
| | 5 | -(8.5) | 1.48E-1(2) | -(8.5) | -(8.5) | 1.61E-1(4) | 1.54E-1(3) | **1.39E-1(1)** | -(8.5) | 2.11E-1(6) | 2.10E-1(5) |
| | 8 | -(8.5) | 2.90E-1(2) | -(8.5) | -(8.5) | 3.35E-1(4) | 3.13E-1(3) | **2.75E-1(1)** | -(8.5) | 3.88E-1(5) | 3.92E-1(6) |
| | 10 | -(8.5) | 3.26E-1(2) | -(8.5) | -(8.5) | 3.73E-1(4) | 3.46E-1(3) | **3.10E-1(1)** | -(8.5) | 4.13E-1(6) | 4.09E-1(5) |
| Avg Rank | | 8.46 | 3.71 | 8.46 | 8.46 | 3.75 | 2.17 | **1.58** | 8.46 | 4.98 | 4.98 |

Table 3: THE IGD+ PERFORMANCE OF EACH SUBSET SELECTION METHOD ON EACH CANDIDATE SOLUTION SET. THE NUMBER OF SOLUTIONS IN EACH CANDIDATESOLUTION SET IS 1,000,000. THE NUMBER IN THE PARENTHESIS IS THE RANK OF THE CORRESPONDING METHOD AMONG THE 10 METHODS, WHERE A SMALLER VALUE INDICATES A BETTER RANK.

| Candidate Solution Set | | GHSS | GAHSS | GIGDSS | GIGD+SS | DSS | IDSS | CSS-MEA | CSS-MED | RVSS-PD | RVSS-AD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Linear Triangular | 3 | -(8.5) | 2.93E-2(5) | -(8.5) | -(8.5) | 3.06E-2(6) | 2.81E-2(2) | **2.58E-2(1)** | -(8.5) | 2.92E-2(3.5) | 2.92E-2(3.5) |
| | 5 | -(8.5) | 7.08E-2(4) | -(8.5) | -(8.5) | 6.93E-2(3) | 6.34E-2(2) | **5.51E-2(1)** | -(8.5) | 7.76E-2(5) | 7.76E-2(6) |
| | 8 | -(8.5) | 1.34E-1(6) | -(8.5) | -(8.5) | 1.29E-1(5) | 1.08E-1(2) | **8.46E-2(1)** | -(8.5) | 1.19E-1(3) | 1.21E-1(4) |
| | 10 | -(8.5) | 1.36E-1(6) | -(8.5) | -(8.5) | 1.30E-1(3) | 1.08E-1(2) | **8.56E-2(1)** | -(8.5) | 1.30E-1(4) | 1.35E-1(5) |
| Linear Invertedtriangular | 3 | -(8.5) | 2.98E-2(4) | -(8.5) | -(8.5) | 2.97E-2(3) | 2.80E-2(2) | **2.62E-2(1)** | -(8.5) | 5.16E-2(5) | 5.17E-2(6) |
| | 5 | -(8.5) | 7.06E-2(4) | -(8.5) | -(8.5) | 6.64E-2(3) | 6.27E-2(2) | **5.85E-2(1)** | -(8.5) | 8.57E-2(5) | 1.07E-1(6) |
| | 8 | -(8.5) | 1.09E-1(3) | -(8.5) | -(8.5) | 1.19E-1(4) | 1.05E-1(2) | **9.67E-2(1)** | -(8.5) | 1.41E-1(6) | 1.35E-1(5) |
| | 10 | -(8.5) | 1.09E-1(3) | -(8.5) | -(8.5) | 1.16E-1(4) | 1.05E-1(2) | **9.88E-2(1)** | -(8.5) | 1.36E-1(6) | 1.27E-1(5) |
| Concave Triangular | 3 | -(8.5) | **2.46E-2(1)** | -(8.5) | -(8.5) | 2.55E-2(2) | 2.59E-2(3) | 2.73E-2(6) | -(8.5) | 2.61E-2(4.5) | 2.61E-2(4.5) |
| | 5 | -(8) | **7.50E-2(1)** | -(8) | -(8) | 7.74E-2(2) | 8.26E-2(5) | -(8) | -(8) | 7.90E-2(3.5) | 7.90E-2(3.5) |
| | 8 | -(8.5) | 1.70E-1(3) | -(8.5) | -(8.5) | 1.73E-1(4) | 1.82E-1(5) | 1.94E-1(6) | -(8.5) | **1.69E-1(1.5)** | **1.69E-1(1.5)** |
| | 10 | -(8.5) | **1.96E-1(1)** | -(8.5) | -(8.5) | 1.99E-1(4) | 2.11E-1(5) | 2.18E-1(6) | -(8.5) | 1.96E-1(2.5) | 1.96E-1(2.5) |
| Concave Invertedtriangular | 3 | -(8.5) | **1.00E-2(1)** | -(8.5) | -(8.5) | 1.01E-2(2) | 1.08E-2(3) | 1.37E-2(4) | -(8.5) | 1.89E-2(6) | 1.82E-2(5) |
| | 5 | -(8) | **1.51E-2(1)** | -(8) | -(8) | 1.57E-2(2) | 1.75E-2(3) | -(8) | -(8) | 6.94E-2(5) | 5.94E-2(4) |
| | 8 | -(8.5) | **2.25E-2(1)** | -(8.5) | -(8.5) | 2.30E-2(2) | 2.32E-2(3) | 2.85E-2(4) | -(8.5) | 7.00E-2(6) | 6.10E-2(5) |
| | 10 | -(8.5) | 2.00E-2(2) | -(8.5) | -(8.5) | **1.96E-2(1)** | 2.04E-2(3) | 2.40E-2(4) | -(8.5) | 6.24E-2(6) | 5.62E-2(5) |
| Convex Triangular | 3 | -(8.5) | 1.13E-2(2) | -(8.5) | -(8.5) | 1.52E-2(4) | 1.35E-2(3) | **1.11E-2(1)** | -(8.5) | 2.16E-2(5) | 2.16E-2(6) |
| | 5 | -(8.5) | 1.59E-2(2) | -(8.5) | -(8.5) | 2.96E-2(4) | 2.10E-2(3) | **1.33E-2(1)** | -(8.5) | 3.38E-2(5) | 3.41E-2(6) |
| | 8 | -(8.5) | 2.30E-2(4) | -(8.5) | -(8.5) | 2.85E-2(5) | 3.09E-2(6) | **1.38E-2(1)** | -(8.5) | 1.59E-2(2) | 1.59E-2(3) |
| | 10 | -(8.5) | 1.87E-2(4) | -(8.5) | -(8.5) | 2.28E-2(5) | 2.43E-2(6) | **1.18E-2(1)** | -(8.5) | 1.29E-2(2) | 1.33E-2(3) |
| Convex Invertedtriangular | 3 | -(8.5) | 2.71E-2(2) | -(8.5) | -(8.5) | 2.98E-2(4) | 2.88E-2(3) | **2.62E-2(1)** | -(8.5) | 4.32E-2(6) | 4.32E-2(5) |
| | 5 | -(8.5) | **7.87E-2(1)** | -(8.5) | -(8.5) | 9.75E-2(4) | 9.10E-2(3) | 8.06E-2(2) | -(8.5) | 1.51E-1(6) | 1.50E-1(5) |
| | 8 | -(8.5) | **1.55E-1(1)** | -(8.5) | -(8.5) | 2.29E-1(4) | 2.04E-1(3) | 1.70E-1(2) | -(8.5) | 2.40E-1(5) | 2.48E-1(6) |
| | 10 | -(8.5) | **1.74E-1(1)** | -(8.5) | -(8.5) | 2.56E-1(6) | 2.26E-1(3) | 1.91E-1(2) | -(8.5) | 2.42E-1(4) | 2.49E-1(5) |
| Avg Rank | | 8.46 | **2.62** | 8.46 | 8.46 | 3.58 | 3.17 | 2.71 | 8.46 | 4.48 | 4.60 |

Table 4: THE UNIFORMITY LEVEL PERFORMANCE OF EACH SUBSET SELECTION METHOD ON EACH CANDIDATE SOLUTION SET. THE NUMBER OF SOLUTIONS IN EACH CANDIDATESOLUTION SET IS 1,000,000. THE NUMBER IN THE PARENTHESIS IS THE RANK OF THE CORRESPONDING METHOD AMONG THE 10 METHODS, WHERE A SMALLER VALUE INDICATES A BETTER RANK.

| Candidate Solution Set | | GHSS | GAHSS | GIGDSS | GIGD+SS | DSS | IDSS | CSS-MEA | CSS-MED | RVSS-PD | RVSS-AD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Linear Triangular | 3 | -(8.5) | 4.93E-2(6) | -(8.5) | -(8.5) | 9.03E-2(3) | 8.16E-2(5) | 8.44E-2(4) | -(8.5) | **1.16E-1(1.5)** | **1.16E-1(1.5)** |
| | 5 | -(8.5) | 1.18E-1(5) | -(8.5) | -(8.5) | 1.70E-1(3) | 1.35E-1(4) | 1.15E-1(6) | -(8.5) | **1.95E-1(1.5)** | **1.95E-1(1.5)** |
| | 8 | -(8.5) | 1.80E-1(5) | -(8.5) | -(8.5) | **2.73E-1(1)** | 2.07E-1(3) | 1.15E-1(6) | -(8.5) | 2.10E-1(2) | 2.07E-1(4) |
| | 10 | -(8.5) | 1.60E-1(5) | -(8.5) | -(8.5) | **2.63E-1(1)** | 1.93E-1(2) | 9.68E-2(6) | -(8.5) | 1.74E-1(4) | 1.77E-1(3) |
| Linear Invertedtriangular | 3 | -(8.5) | 6.22E-2(4) | -(8.5) | -(8.5) | **9.02E-2(1)** | 8.08E-2(3) | 8.44E-2(2) | -(8.5) | 0(5.5) | 0(5.5) |
| | 5 | -(8.5) | 1.14E-1(4) | -(8.5) | -(8.5) | **1.70E-1(1)** | 1.35E-1(2) | 1.17E-1(3) | -(8.5) | 0(5.5) | 0(5.5) |
| | 8 | -(8.5) | 1.85E-1(3) | -(8.5) | -(8.5) | **2.76E-1(1)** | 2.08E-1(2) | 1.19E-1(4) | -(8.5) | 0(5.5) | 0(5.5) |
| | 10 | -(8.5) | 1.67E-1(3) | -(8.5) | -(8.5) | **2.63E-1(1)** | 1.92E-1(2) | 9.92E-2(4) | -(8.5) | 0(5.5) | 0(5.5) |
| Concave Triangular | 3 | -(8.5) | 7.16E-2(6) | -(8.5) | -(8.5) | 1.13E-1(2) | 1.08E-1(3) | **1.15E-1(1)** | -(8.5) | 8.93E-2(4.5) | 8.93E-2(4.5) |
| | 5 | -(8) | 1.23E-1(5) | -(8) | -(8) | **2.72E-1(1)** | 2.23E-1(2) | -(8) | -(8) | 1.77E-1(3.5) | 1.77E-1(3.5) |
| | 8 | -(8.5) | 2.82E-1(3) | -(8.5) | -(8.5) | **4.96E-1(1)** | 4.07E-1(2) | 2.57E-1(4) | -(8.5) | 2.56E-1(5.5) | 2.56E-1(5.5) |
| | 10 | -(8.5) | 3.03E-1(3) | -(8.5) | -(8.5) | **5.22E-1(1)** | 4.20E-1(2) | 2.32E-1(4) | -(8.5) | 2.23E-1(5.5) | 2.23E-1(5.5) |
| Concave Invertedtriangular | 3 | -(8.5) | 2.75E-2(4) | -(8.5) | -(8.5) | 5.47E-2(2) | **5.49E-2(1)** | 4.93E-2(3) | -(8.5) | 0(5.5) | 0(5.5) |
| | 5 | -(8) | 3.21E-2(3) | -(8) | -(8) | **7.62E-2(1)** | 5.66E-2(2) | -(8) | -(8) | 0(4.5) | 0(4.5) |
| | 8 | -(8.5) | 5.80E-2(3) | -(8.5) | -(8.5) | **1.16E-1(1)** | 6.56E-2(2) | 3.85E-2(4) | -(8.5) | 0(5.5) | 0(5.5) |
| | 10 | -(8.5) | 4.71E-2(3) | -(8.5) | -(8.5) | **9.68E-2(1)** | 4.86E-2(2) | 2.84E-2(4) | -(8.5) | 0(5.5) | 0(5.5) |
| Convex Triangular | 3 | -(8.5) | 3.42E-2(6) | -(8.5) | -(8.5) | **5.52E-2(1)** | 5.46E-2(2) | 4.87E-2(3) | -(8.5) | 3.89E-2(4.5) | 3.89E-2(4.5) |
| | 5 | -(8.5) | 3.49E-2(6) | -(8.5) | -(8.5) | **7.82E-2(1)** | 5.60E-2(2) | 4.63E-2(3) | -(8.5) | 4.15E-2(4.5) | 4.15E-2(4.5) |
| | 8 | -(8.5) | 4.69E-2(3) | -(8.5) | -(8.5) | **1.17E-1(1)** | 6.56E-2(2) | 3.85E-2(5) | -(8.5) | 3.79E-2(6) | 4.35E-2(4) |
| | 10 | -(8.5) | 3.17E-2(5) | -(8.5) | -(8.5) | **9.61E-2(1)** | 4.84E-2(2) | 2.71E-2(6) | -(8.5) | 3.25E-2(4) | 3.67E-2(3) |
| Convex Invertedtriangular | 3 | -(8.5) | 7.08E-2(4) | -(8.5) | -(8.5) | 1.13E-1(2) | 1.07E-1(3) | **1.15E-1(1)** | -(8.5) | 0(5.5) | 0(5.5) |
| | 5 | -(8.5) | 1.55E-1(4) | -(8.5) | -(8.5) | **2.72E-1(1)** | 2.23E-1(2) | 2.02E-1(3) | -(8.5) | 0(6) | 3.13E-2(5) |
| | 8 | -(8.5) | 2.53E-1(4) | -(8.5) | -(8.5) | **4.96E-1(1)** | 4.07E-1(2) | 2.66E-1(3) | -(8.5) | 0(5.5) | 0(5.5) |
| | 10 | -(8.5) | 2.40E-1(3) | -(8.5) | -(8.5) | **5.17E-1(1)** | 4.17E-1(2) | 2.35E-1(4) | -(8.5) | 0(5.5) | 0(5.5) |
| Avg Rank | | 8.46 | 4.17 | 8.46 | 8.46 | **1.29** | 2.33 | 4.12 | 8.46 | 4.69 | 4.56 |

Table 5: THE RUNTIME PERFORMANCE OF EACH SUBSET SELECTION METHOD ON EACH CANDIDATE SOLUTION SET. THE NUMBER OF SOLUTIONS IN EACH CANDIDATESOLUTION SET IS 1,000,000. THE NUMBER IN THE PARENTHESIS IS THE RANK OF THE CORRESPONDING METHOD AMONG THE 10 METHODS, WHERE A SMALLER VALUE INDICATES A BETTER RANK.

| Candidate Solution Set | | GHSS | GAHSS | GIGDSS | GIGD+SS | DSS | IDSS | CSS-MEA | CSS-MED | RVSS-PD | RVSS-AD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Linear Triangular | 3 | -(8.5) | 4.85E+2(5) | -(8.5) | -(8.5) | 1.27E+2(4) | 4.46E+1(3) | 2.08E+3(6) | -(8.5) | 9.95E+0(2) | **2.88E+0(1)** |
| | 5 | -(8.5) | 1.07E+3(5) | -(8.5) | -(8.5) | 5.82E+2(4) | 4.06E+1(3) | 2.72E+3(6) | -(8.5) | 1.69E+1(2) | **4.80E+0(1)** |
| | 8 | -(8.5) | 8.84E+2(5) | -(8.5) | -(8.5) | 3.61E+2(4) | 4.05E+1(3) | 2.30E+3(6) | -(8.5) | 1.56E+1(2) | **3.77E+0(1)** |
| | 10 | -(8.5) | 1.64E+3(5) | -(8.5) | -(8.5) | 1.06E+3(4) | 4.02E+1(3) | 1.84E+3(6) | -(8.5) | 2.63E+1(2) | **3.60E+0(1)** |
| Linear Invertedtriangular | 3 | -(8.5) | 4.58E+2(5) | -(8.5) | -(8.5) | 1.08E+2(4) | 4.23E+1(3) | 2.49E+3(6) | -(8.5) | 9.28E+0(2) | **2.61E+0(1)** |
| | 5 | -(8.5) | 1.12E+3(5) | -(8.5) | -(8.5) | 5.76E+2(4) | 3.94E+1(3) | 2.87E+3(6) | -(8.5) | 2.06E+1(2) | **5.56E+0(1)** |
| | 8 | -(8.5) | 8.84E+2(5) | -(8.5) | -(8.5) | 3.73E+2(4) | 3.93E+1(3) | 2.47E+3(6) | -(8.5) | 8.62E+0(2) | **3.59E+0(1)** |
| | 10 | -(8.5) | 1.78E+3(5) | -(8.5) | -(8.5) | 1.10E+3(4) | 3.72E+1(3) | 2.58E+3(6) | -(8.5) | 2.25E+1(2) | **4.34E+0(1)** |
| Concave Triangular | 3 | -(8.5) | 4.75E+2(5) | -(8.5) | -(8.5) | 1.03E+2(4) | 4.35E+1(3) | 2.04E+3(6) | -(8.5) | 9.32E+0(2) | **2.63E+0(1)** |
| | 5 | -(8) | 1.16E+3(5) | -(8) | -(8) | 5.93E+2(4) | 4.17E+1(3) | -(8) | -(8) | 1.79E+1(2) | **4.83E+0(1)** |
| | 8 | -(8.5) | 8.70E+2(5) | -(8.5) | -(8.5) | 3.44E+2(4) | 4.09E+1(3) | 3.11E+3(6) | -(8.5) | 1.52E+1(2) | **4.88E+0(1)** |
| | 10 | -(8.5) | 1.71E+3(6) | -(8.5) | -(8.5) | 9.43E+2(4) | 4.16E+1(3) | 1.64E+3(5) | -(8.5) | 3.00E+1(2) | **5.96E+0(1)** |
| Concave Invertedtriangular | 3 | -(8.5) | 4.50E+2(5) | -(8.5) | -(8.5) | 9.85E+1(4) | 4.45E+1(3) | 2.52E+3(6) | -(8.5) | 9.09E+0(2) | **2.40E+0(1)** |
| | 5 | -(8) | 1.17E+3(5) | -(8) | -(8) | 5.55E+2(4) | 3.93E+1(3) | -(8) | -(8) | 1.46E+1(2) | **6.10E+0(1)** |
| | 8 | -(8.5) | 9.16E+2(5) | -(8.5) | -(8.5) | 3.78E+2(4) | 4.39E+1(3) | 2.57E+3(6) | -(8.5) | 1.74E+1(2) | **6.03E+0(1)** |
| | 10 | -(8.5) | 1.73E+3(5) | -(8.5) | -(8.5) | 1.09E+3(4) | 3.99E+1(3) | 2.01E+3(6) | -(8.5) | 1.69E+1(2) | **5.58E+0(1)** |
| Convex Triangular | 3 | -(8.5) | 5.11E+2(5) | -(8.5) | -(8.5) | 1.24E+2(4) | 4.26E+1(3) | 2.29E+3(6) | -(8.5) | 9.78E+0(2) | **2.83E+0(1)** |
| | 5 | -(8.5) | 1.15E+3(5) | -(8.5) | -(8.5) | 5.76E+2(4) | 4.49E+1(3) | 2.84E+3(6) | -(8.5) | 1.52E+1(2) | **5.07E+0(1)** |
| | 8 | -(8.5) | 8.99E+2(5) | -(8.5) | -(8.5) | 3.75E+2(4) | 3.99E+1(3) | 2.40E+3(6) | -(8.5) | 1.49E+1(2) | **3.48E+0(1)** |
| | 10 | -(8.5) | 1.33E+3(5) | -(8.5) | -(8.5) | 1.06E+3(4) | 3.78E+1(3) | 2.87E+3(6) | -(8.5) | 1.68E+1(2) | **6.18E+0(1)** |
| Convex Invertedtriangular | 3 | -(8.5) | 4.48E+2(5) | -(8.5) | -(8.5) | 1.09E+2(4) | 4.18E+1(3) | 2.02E+3(6) | -(8.5) | 9.09E+0(2) | **2.23E+0(1)** |
| | 5 | -(8.5) | 1.21E+3(5) | -(8.5) | -(8.5) | 6.09E+2(4) | 4.18E+1(3) | 3.07E+3(6) | -(8.5) | 1.60E+1(2) | **5.29E+0(1)** |
| | 8 | -(8.5) | 9.22E+2(5) | -(8.5) | -(8.5) | 2.65E+2(4) | 4.16E+1(3) | 3.06E+3(6) | -(8.5) | 1.16E+1(2) | **3.30E+0(1)** |
| | 10 | -(8.5) | 1.14E+3(5) | -(8.5) | -(8.5) | 1.08E+3(4) | 4.04E+1(3) | 2.32E+3(6) | -(8.5) | 2.43E+1(2) | **8.12E+0(1)** |
| Avg Rank | | 8.46 | 5.04 | 8.46 | 8.46 | 4.00 | 3.00 | 6.12 | 8.46 | 2.00 | **1.00** |

Table 6: A SUMMARY OF THE RANK OF THE 10 SUBSET SELECTION METHODS WITH RESPECT TO DIFFERENT PERFORMANCE METRICS.

| Performance metric | GHSS | GAHSS | GIGDSS | GIGD+SS | DSS | IDSS | CSS-MEA | CSS-MED | RVSS-PD | RVSS-AD |
|---|---|---|---|---|---|---|---|---|---|---|
| hypervolume | 8.46 | **1.75** | 8.46 | 8.46 | 2.58 | 3.71 | 5.00 | 8.46 | 4.19 | 3.94 |
| IGD | 8.46 | 3.71 | 8.46 | 8.46 | 3.75 | 2.17 | **1.58** | 8.46 | 4.98 | 4.98 |
| IGD+ | 8.46 | **2.62** | 8.46 | 8.46 | 3.58 | 3.17 | 2.71 | 8.46 | 4.48 | 4.60 |
| uniformity level | 8.46 | 4.17 | 8.46 | 8.46 | **1.29** | 2.33 | 4.12 | 8.46 | 4.69 | 4.56 |
| runtime | 8.46 | 5.04 | 8.46 | 8.46 | 4.00 | 3.00 | 6.12 | 8.46 | 2.00 | **1.00** |